UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,394	09/12/2003	Darwin Mitchel Hanks	200313592-1	8422

			EXAMINER
22879	7590	05/03/2006	LAMB, CHRISTOPHER RAY

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ART UNIT	PAPER NUMBER
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/661,394	HANKS ET AL.
	Examiner	Art Unit
	Christopher R. Lamb	2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _11 May 2005_.

2a)☐ This action is **FINAL**.　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-49_ is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-4,8-17,19,20,22-30,33-40 and 43-49_ is/are rejected.

7)☒ Claim(s) _5-7,18,21,31,32,41 and 42_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _12 September 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _3 total_.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Specification

1.   The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claims 10, 11, 24, and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 10 and 24, they are indefinite because the claims do not define the claimed terms A0, A1, S2, B1, B2, DC0, QS1, QS2, QC1, and QC2.

Regarding claim 11, it is indefinite because the claim does not define function Wk or terms Mu and Ek; in the particular case of Wk, it may itself be the actuator control signal, but the phrase "according to" implies that it is a separate signal the control signal is based on.

Regarding claim 25, it is indefinite because the claim does not define function Wk, similar to claim 11.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claim 1, 4, 8, 11-14, 16, 20, 25-27, 29, 35, 37, 38, 39, and 46-48 are rejected

under 35 U.S.C. 102(b) as being anticipated by Faucett (US 2002/0089906).

Regarding claim 1, Faucett discloses a system for providing a signal to an

actuator within an optical disk drive, to focus optics on a disk within the optical disk drive

(paragraph 17), wherein the system comprises:

a SUM table within which to record SUM signal data (it samples and digitizes the

signal from the quad-detector, which is presumably a SUM signal, and provides it to the

controller where it is manipulated, so it must be stored in some sort of table: paragraph

15);

an error term generator to process the SUM signal data from the SUM table to

produce an error term (the error terms E(n) are produced by the controller: paragraph

15); and

an actuator control signal generator to generate an actuator control signal,

wherein the actuator control signal is a function of a prior actuator position, the error

term and an adaptation coefficient, wherein the adaptation coefficient is configured to

regulate a rate at which the error term is allowed to modify the prior actuator position

(equation 3: the actuator control signal is Y(n), the error term is E(n), the adaption

coefficient is A, and the prior actuator position is Y(n-1)).

Regarding claim 4, it is not specifically described in Faucett, but it is inherent

(Faucett associates each term with its sample time n. This time is indicative of both the

sector of the disk, because each later n term reflects a greater distance of that sample,

and the direction of actuator movement, because the term Y(n), also stored, indicates

the position and direction of the actuator).

Regarding claim 8, in Faucett the error term generator is configured to calculate

the error term for every sector of the disk (Faucett calculates it for every sample time n).

Regarding claim 11, in Faucett the actuator control signal generated is

configured to generate a signal according to Wk(new)=Wk(old)-(Mu*Ek) (equation 3:

Y(n) corresponds to Wk(new), Y(n-1) corresponds to Wk(old), A corresponds to Mu, and

Ek corresponds to E(n). Faucett's equation 3 includes more terms, but the control

signal is nonetheless generated "according to" those terms).

Regarding claim 12, in Faucett the actuator control signal generator is

configured, if an angular disk speed of the optical disk drive is sufficiently high, to shift a

phase of terms within the actuator control signal to improve convergence of coefficient

generation (paragraph 28: shifting the values A and B effectively shifts the phase of

output signal Y(n); "a shorter time for the compensator to settle out" can be interpreted

to be improving convergence of the coefficient generation).

Regarding claim 13, generating the signal Y(n) is a baseline actuator positioning routine to set a baseline voltage level (this baseline voltage level is applied to the focus motor and the focus operation is performed around it: paragraph 17).

Regarding claim 14, the baseline voltage level has an AC component which varies as a function of disk angular orientation (the baseline voltage level signal Y(n) alternates based on the eccentricity of the disk, and thus as a function of its angular orientation).

Regarding claim 16, 25, and 27, Faucett includes a processor-readable medium comprising processor-executable instructions (paragraph 15). Otherwise these claim is similar to earlier claims and are rejected for the same reasons.

Regarding claim 20, in Faucett generating the error term comprises instructions for selecting a number of sectors to be defined on the disk (each sample time can be considered to correspond to one "sector" of the disk; thus this is inherent to Faucett).

Regarding claim 26, in Faucett generating the actuator control signal comprises instructions for, if an angular disk speed of the optical disk is sufficiently high, shifting a phase of terms within the actuator control signal to compensate for actuator harmonics (paragraph 30: adjusting the terms A, B, and C corresponds to shifting the phase of the output signal).

Regarding claims 29, 35, 37, 38, 39, and 46-48, these claims are similar to earlier claims and are rejected for the same reasons.

6.   Claims 1, 3, 4, 9, 13, 14, 16, 23, 27, 29, 33, 35, 39, 44, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Hajjar et al. (US 5,742,573).

Hajjar discloses a system for providing a signal to an actuator within an optical

disk drive, to focus optics on a disk within the optical disk drive (abstract), wherein the

system comprises:

a SUM table within which to record SUM signal data (column 5, lines 23-31; the

position signal is sampled, so it must be recorded in a table of some kind; Hajjar doesn't

specifically disclose how the position data is calculated, but it is presumably a summed

signal of some kind);

an error term generator to process the SUM signal data from the table to produce

an error term (column 5, lines 23-37; the error term is the feed forward signal); and

an actuator control signal generator to generate an actuator control signal,

wherein the actuator control signal is a function of a prior actuator position, the error

term and an adaptation coefficient, wherein the adaptation coefficient is configured to

regulate a rate at which the error term is allowed to modify the prior actuator position

(the feed forward signal is applied to the actuator: column 5, lines 1-11. That there is an

adaption coefficient follows from column 4, lines 53-57: if the signal is averaged with

previous iterations there must be a coefficient to control the averaging process).

Regarding claim 3, in Hajjar the SUM table is configured to include summations

of sampled SUM data associated with both actuator movement from a baseline toward

the disk and away from the disk (the SUM table records the vertical position of the lens,

and thus every entry is associated with actuator movement in one direction or the

other).

Regarding claim 4, in Hajjar each entry with the SUM table is associated with a sector of the disk and a direction of actuator movement (the SUM table is associated with the angle of the disk, and the SUM value itself indicates the direction of the actuator movement).

Regarding claim 9, in Hajjar the actuator control signal additionally comprises: a coefficient generator to generate coefficients as a function of inputs comprising the adaptation coefficient and the error terms (column 5, lines 23-37); and a Fourier subroutine to generate the actuator control signal using the coefficients generated (column 5, lines 23-37).

Regarding claim 13, the system of Hajjar comprises a baseline actuator positioning routine to set a baseline voltage level (the feed forward signal generated sets the baseline voltage level for normal focus operation).

Regarding claim 14, the baseline voltage lvel has an AC component which varies as a function of disk angular orientation (it alternates with the eccentricity).

Regarding claims 16, 23, 27, 29, 33, 35, 39, 44, and 48, they are similar to the earlier claims and are rejected for the same reasons.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 2, 17, 19, 22, 30, 40 and 43 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Faucett (US 2002/0089906) in view of Honda et al. (US

2002/0191517).

Regarding claim 2, Faucett discloses a system as previously discussed.

Honda discloses an optical disk writer that can both write data to a disk and apply

an image to the label side of the disk (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the

invention to include in Faucett the capability of applying an image to a disk. The

motivation would have been to add more functionality to the disk player.

Since in Faucett the SUM table is configured to be updated prior to writing to an

annular portion of the disk (Faucett always updates the SUM table before any focusing

operation), in the combination of Faucett in view of Honda necessarily includes wherein

the SUM table is configured to be updated prior to an application of an image to an

annular portion of the disk.

Regarding claims 17, 19, 22, 30, 40, and 43, they are similar to claim 2 and are

rejected for the same reasons.

9.   Claims 10, 24, 34, and 45 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Hajjar (US 5,742,573).

Regarding claim 10, as the terms in the claim have not been defined, it is difficult

to understand this claim (see 112 rejection above). However, as the examiner

understands the claim, the coefficients are the coefficients of a Fourier series

representation of the error signal, where the Mu term is the adaption coefficient from

claim 1 which regulates the rate at which the error term modifies an actuator control signal.

Hajjar does not disclose these specific equations for the coefficients. However, Hajjar does disclose creating the coefficients of a Fourier series representation (column 4, lines 37-56), and Hajjar discloses further refining the representation by averaging coefficients with previous iteration coefficients (column 4, lines 37-56). Given that the fundamental principles of Hajjar's Fourier series representation are the same, the equations are simply mathematical details of the particular Fourier series and averaging technique used, and it would have been obvious to one of ordinary skill in the art at the time of the invention to produce the coefficients as claimed.

Regarding claims 24, 34, and 45, they are similar to claim 10 and are rejected for the same reasons.

10.   Claims 15, 28, 36, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hajjar et al. (US 5,742,573) in view of Kadlec et al. (US 6,813,226).

Regarding claim 15, Hajjar discloses a system as discussed above, including a baseline actuator positioning routine to establish a baseline signal for application to an actuator.

Hajjar does not disclose "wherein the baseline actuator positioning routine is configured to: step an actuator through a full range of focus; record a maximum value of the SUM signal data obtained within the full range of focus; and set the baseline signal according to an input to the actuator which resulted in close to the maximum value of the SUM signal data."

In fact, although Hajjar discloses that the lens focuses on the disk as part of the routine (column 2, lines 3-5), Hajjar does not disclose any details of the focusing system.

Kadlec discloses a focusing system including calculating a focus sum threshold (column 3, lines 28-42). The focus sum threshold is used to determine if a focus is acceptable (column 55, lines 35-49). Calculating a focus sum threshold comprises: stepping an actuator through a full range of focus (column 55, lines 15-24); recording a maximum value of the SUM signal data obtained with the full range of focus (column 55, lines 32-34); and setting the focal sum threshold close to the maximum value of the SUM signal data (column 55, lines 35-49).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hajjar to include the focusing system disclosed by Kadlec, including the step of calculating the focus sum threshold. The motivation would have been to allow data to be reliably read from and written to the optical media, which Kadlec system does (Kadlec, column 2, lines 46-49).

Since focusing is part of the baseline actuator positioning routine of Hajjar, Hajjar in view of Kadlec includes wherein the baseline actuator positioning routine is configured to: step an actuator through a full range of focus; record a maximum value of the SUM signal data obtained within the full range of focus; and set the baseline signal according to an input to the actuator which resulted in close to the maximum value of the SUM signal data.

Regarding claims 28, 36 and 49, they are similar to claim 15 and rejected for similar reasons.

Allowable Subject Matter

11.   Claims 5, 6, 7, 18, 21, 31, 32, 41, and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12.   The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, the closest prior art of record, Faucett, does not teach or suggest **wherein the SUM table is configured to include data obtained while moving an actuator in a first direction during a first disk revolution and data obtained while moving the actuator in a second direction during a second disk revolution.**

Regarding claim 6, the closest prior art of record, Faucett, does not teach or suggest **wherein error term data is included within the SUM table for each sector, and comprises a difference between SUM signal data associated with actuator movement away from the disk and SUM signal data associated with actuator movement toward the disk.**

Regarding claim 7, the closest prior art of record, Faucett, does not teach or suggest **wherein the error term generator is configured to calculate, for each sector, a difference of SUM signal data associated with actuator movement away**

from the disk and SUM signal data associated with actuator movement toward the disk.

Regarding claims 18, 21, 31, 32, 41, and 42, they contain language similar to claims 5, 6, and 7. This language is combination with the other elements of the claims renders these claims allowable over the prior art of record.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Andrews, Jr. et al. (US 4,628,379), Kim (US 6,714,492).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Lamb whose telephone number is (572) 272-5264. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

CRL 4/28/06

THANG V. TRAN
PRIMARY EXAMINER